

**We claim**

1. A rapid process for screening of neuroactive substance and the associated neural plasticity in a subject wherein said process comprising the steps:
  - (a) culturing *Drosophila melanogaster*;
  - (b) collecting flies of a single age group;
  - (c) separating males from females flies of step (b);
  - (d) treating the males of step (c) in the presence or absence of neuroactive drugs in the medium comprising agar-agar, maize powder, brown sugar, dried yeast and nipagin;
  - (e) subjecting the flies of step (d) to negative geotaxis and horizontal locomotor assays;
  - (f) examining locomotor activities of flies of step (e) in terms of height climbed, climbing speed and distance walked, wherein an alteration in either of the three locomotor activities in drug treated males, compared to those of normally fed flies, is characteristic of neuroactive compounds;
  - (g) withdrawing drugs from the diet of drug treated flies of step (d);
  - (h) subjecting the flies of step (g) to negative geotaxis and horizontal locomotion assays, and
  - (i) examining locomotor activity of flies of step (h) in terms of height climbed, climbing speed and distance walked, wherein an alteration in either of the three locomotor activities in drug treated males after drug withdrawal, compared to that of normally fed flies, is indicative of neural plasticity induced by neuroactive compounds.
2. A process as claimed in claim 1, wherein the subject is *Drosophila melanogaster*.
3. A process as claimed in claim 1, wherein in step (b) the age is in the range of 2 to 4 days.
4. The process as claimed in claim 1, wherein an altered height climbed by flies under drug treatment and an altered climbing speed of flies after drug withdrawal are selected as most characteristic of neuroactive compounds.